UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
OREGON OPERATIONS OFFICE
811 S.W. 6th Avenue
Portland, Oregon 97204

September 20, 2007

Mr. Jim McKenna
Port of Portland & Co-Chairman, Lower Willamette Group
121 NW Everett
Portland, Oregon 97209

Mr. Robert Wyatt
Northwest Natural & Co-Chairman, Lower Willamette Group
220 Northwest Second Avenue
Portland, Oregon 97209

Re: Portland Harbor Superfund Site; Administrative Order on Consent for Remedial Investigation and Feasibility Study; Docket No. CERCLA-10-2001-0240. Technical Memorandum: Sedflume Data Incorporation into Hydrodynamic/Sediment Transport Model

Dear Messrs. Wyatt and McKenna:

EPA has completed its review of the Technical Memorandum: Sedflume Data Incorporation into Hydrodynamic/Sediment Transport Model (Sedflume Tech Memo). This document was prepared by Integral Consulting on behalf of the Lower Willamette Group (LWG) and was received on July 25, 2007.

General Comment:

EPA believes that the Sedflume data collected in 2006 will improve the overall performance of the hydrodynamic sedimentation model significantly. The Sedflume Tech Memo describes two approaches for incorporating the Sedflume data into the hydrodynamic sediment transport model. The first approach is to develop a universal erosion equation for fine-grained sediments. The second approach is to develop core-specific relationships between erosion, bed stress and possibly other parameters such as grain size and bulk density. EPA recommends the second approach. Numerous researchers have attempted to develop a universal erosion equation for fine grained sediment without success.

Specific Comments:

Associating Sedflume Cores with Water Body Regions, Page 2: The Sedflume Tech Memo proposes to associate individual Sedflume cores with specific Round 2 samples and, in turn, a

model grid cell. Although this approach is acceptable since the sediment transport model will be run for a given period of time that includes multiple high-flow events, EPA recommends the use of the maximum bed shear stress that each cell (in which the sediment is dominated by fine-grain sediment) is subjected to during a high flow event for the following reasons: 1) it establishes what can be interpreted as a normalizing parameter in a dimensionless relationship between excess bed shear stress and erosion rate; 2) it represents the maximum force that the sediment bed in each cell is subjected to over the course of the high-flow event, and as such, it is not unreasonable to assume that the bed properties (bed shear strength, bulk density) in at least the surficial sediment of cells that are subjected to a similar maximum bed shear stress (within +/- 0.03 Pa) would be approximately the same; and 3) it could be interpreted as being somewhat less arbitrary than a method of assigning initial sediment properties based on linear interpolation between Sedflume cores and Round 2 sample locations.

Sedflume Core-Specific Erosion Functions, Page 5: EPA agrees that some measure (such as r^2 values) should be used to determine how cores should be split into bins.

Recommended Approach, Page 5: EPA does not support the development of a universal erosion function. Developing core specific relationships is likely to be a more successful approach.

Recommended Approach, Page 6: Relationships determined for the vertical bins should always be used to preserve the vertical shear stress and erosion rate profiles found during the Sedflume analysis.

Table 2: r^2 values should be presented in this table.

If these revisions are acceptable to the LWG, you may proceed with revising the hydrodynamic sedimentation model. Otherwise, EPA staff are available for a LWG/EPA modeling group teleconference as you suggested in your transmittal letter. Please contact Chip Humphrey at (503) 326-2678 or Eric Blischke (503) 326-4006 if you have any questions or to schedule a teleconference. All legal inquiries should be directed to Lori Cora at (206) 553-1115.

Sincerely,

Chip Humphrey
Eric Blischke
Remedial Project Managers

cc: Greg Ulirsch, ATSDR
Rob Neely, NOAA
Ted Buerger, US Fish and Wildlife Service
Preston Sleeger, Department of Interior
Jim Anderson, DEQ
Kurt Burkholder, Oregon DOJ
Rick Keppler, Oregon Department of Fish and Wildlife
Michael Karnosh, Confederated Tribes of Grand Ronde
Tom Downey, Confederated Tribes of Siletz
Audie Huber, Confederated Tribes of Umatilla
Brian Cunninghame, Confederated Tribes of Warm Springs
Erin Madden, Nez Perce Tribe
Rose Longoria, Confederated Tribes of Yakama Nation